

**U.S. Department of Energy**

**Office of Science**

**Fiscal Year 2010**

**Performance Evaluation Report of the**

**Jefferson Science Associates, LLC for**

**Management and Operations of Science and Technology at**

**the**

**Thomas Jefferson National Accelerator Facility**

**For the period October 1, 2009, to September 30, 2010**

## I. OVERALL SUMMARY RATING/FEE

### Performance-Based Score and Adjectival Rating:

The basis for the evaluation of Jefferson Science Associates, LLC (the Contractor) management and operations of the Thomas Jefferson National Accelerator Facility (the Laboratory) during FY 2010 centered on the Objectives found within the following Performance Goals:

- 1.0 Provide for Efficient and Effective Mission Accomplishment
- 2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities
- 3.0 Provide Effective and Efficient Science and Technology Program Management
- 4.0 Provide Sound and Competent Leadership and Stewardship of the Laboratory
- 5.0 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection
- 6.0 Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)
- 7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs
- 8.0 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security management (ISSM) and Emergency Management Systems

Each Performance Goal was composed of two or more weighted Objectives and most Objectives had a set of performance measures, which assisted in determining the Contractor's overall performance in meeting that Objective. Each of the performance measures identified significant activities, requirements, and/or milestones important to the success of the corresponding Objective. The following describes the methodology utilized in determining the Contractor performance rating.

Each Objective within a Goal was assigned a numerical score by the evaluating office. Each evaluation measured the degree of effectiveness and performance of the Contractor in meeting the Objective and was based on the Contractor's success in meeting the set of Performance Measures/Targets identified for each Objective as well as other performance information available to the evaluating office from other sources to include, but not limited to, the Contractor's self-evaluation report, operational awareness (daily oversight) activities; "For Cause" reviews (if any); other outside agency reviews (OIG, GAO, DCAA, etc.), and the annual 2-week review (if needed). If no performance measures/targets were utilized the description of the general expectations for the success of the objective was utilized as the baseline of the effectiveness and performance of the Contractor in meeting the corresponding Objective and in determining the score assigned. The Goal score was then computed by multiplying the numerical score by the weight of each Objective within a Goal. These values were then added together to develop an overall score for each Goal. This score was then compared to Table A to determine the overall grade for each Goal. A set of tables is provided at the end of each Performance Goal section of this document to assist in the calculation of Objective scores to the Goal score. The raw score (rounded to the nearest hundredth) from each calculation was carried through to the next stage of the calculation process. The raw score for Science and Technology and Management and Operations was rounded to the nearest tenth of a point for utilization in determining fee as discussed below. A standard rounding convention of x.44 and less rounds down to the nearest tenth (here, x.4), while x.45 and greater rounds up to the nearest tenth (here, x.50).

<b>Score</b>	<b>0.1-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table A - FY 2010 Contractor Letter Grade Scale**

Based on the evaluation of Thomas Jefferson National Accelerator Facility performance against the Goals and Objectives contained within the FY 2010 Performance Evaluation and Measurement Plan (PEMP) the scores and corresponding grades awarded for each are provided within Table B below. Specific information regarding the Contractor's performance in meeting each of the Goals and their corresponding Objectives is provided within Section II of this report.

<b>Science and Technology</b>	<b>Numerical Score</b>	<b>Letter Grade</b>	<b>Objective Weight</b>	<b>Weighted Score</b>	<b>Total Score</b>
1.0 Provide for Efficient and Effective Mission Accomplishment	3.6	A-	40.2%	1.45	
2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities	3.5	A-	39.7%	1.39	
3.0 Provide Effective and Efficient Science and Technology Program Management	3.4	B+	20.1%	0.68	
				Total Score	<b>3.5</b>
<b>Maintenance and Operations</b>	<b>Numerical Score</b>	<b>Letter Grade</b>	<b>Objective Weight</b>	<b>Weighted Score</b>	<b>Total Score</b>
4.0 Provide Sound and Competent Leadership and Stewardship of the Laboratory	3.3	B+	20.0%	0.66	
5.0 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection	3.3	B+	25.0%	0.83	
6.0 Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)	3.4	B+	20.0%	0.68	
7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs	3.7	A-	20.0%	0.74	
8.0 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security management (ISSM) and Emergency Management Systems	3.4	B+	15.0%	0.51	
				Total Score	<b>3.4</b>

**Table B - FY 2010 Contractor Evaluation Score Calculation**

**Please note:** In most tables, numbers are rounded for display purposes. As such, weights may not add up to 100% in Tables B, 1.2, 1.4, 2.2, 2.4, 3.2 and 3.4.

Performance-Based Fee Earned:

Utilizing Table B, above, the scores for each of the Science and Technology (S&T) Goals and Management and Operations (M&O) Goals were multiplied by the weight assigned and these were summed to provide an overall score for each. The percentage of the available performance-based fee that was earned by the Contractor was determined based on the overall weighted score for the S&T Goals (see Table B.) and then compared to Table C. below. The overall numerical score of the M&O Goals from Table B was then utilized to determine the final fee multiplier (see Table C.), which was utilized to determine the overall amount of performance-based fee earned for FY 2010 as calculated within Table D. Based on the overall performance within the S&T and M&O Goals the Contractor is awarded **\$ 2,914,000.00** in performance based fee for FY 2010.

Overall Weighted Score from Table A	Percent S&T Fee Earned	M&O Fee Multiplier
4.1 to 4.3	100.00%	100.00%
3.8 to 4.0	97.00%	100.00%
3.5 to 3.7	94.00%	100.00%
3.1 to 3.4	91.00%	100.00%
2.8 to 3.0	88.00%	95.00%
2.5 to 2.7	85.00%	90.00%
2.1 to 2.4	75.00%	85.00%
1.8 to 2.0	50.00%	75.00%
1.1 to 1.7	0.00%	60.00%
0.8 to 1.0	0.00%	0.00%
0.1 to 0.7	0.00%	0.00%

**Table C - Performance Based Fee Earned Scale**

Overall Fee Determination	
Percent S&T Fee Earned From Table C.	94.00%
M&O Fee Multiplier From Table C.	X 100.00%
Overall Earned Performance-Based Fee	94.00%

**Table D - Final Percentage of Performance Based Fee Earned Determination**

Earned Fee Calculation	
Available Fee	\$3,100,000.00
Overall Earned Performance - Base Fee (Table D)	X 94.00%
Earned Fee	\$2,914,000.00

**Table E - Earned Fee Calculation**

## II. PERFORMANCE GOALS, OBJECTIVES, AND MEASURES/TARGETS

### **Goal 1.0: Provide for Efficient and Effective Mission Accomplishment**

**The Contractor produces high-quality, original, and creative results that advance science and technology; demonstrates sustained scientific progress and impact; receives appropriate external recognition of accomplishments; and contributes to overall research and development goals of the Department and its customers.**

**The weight of this Goal is 40.0%**

#### **Objectives**

##### **1.1: Science and Technology Results Provide Meaningful Impact on the Field**

##### **1.2: Provide Quality Leadership in Science and Technology**

##### **1.3: Provide and Sustain Outputs that Advance Program Objectives & Goals**

##### **1.4: Provide for Effective Delivery of Products**

*SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.*

#### **Basic Energy Sciences (BES)**

BES-supported accelerator R&D related research at JLab, initiated in FY 2010, is in an early phase of development. The project is progressing well, even though no assessment or formal review of progress has been conducted.

#### **Biological and Environmental Research (BER)**

The JLab Radionuclide Imaging SFA has made significant progress in the design and development of an SPECT plant imaging system. Their recent published results have had a impact in the radioimaging and plant communities

#### **Nuclear Physics (NP)**

- Researchers conducted experiments that provide high impact on the field of nuclear physics: exploration of the EMC Effect, electromagnetic and electroweak properties of nucleons, and searches for excited states of exotic hadrons.
- The Laboratory developed a dedicated computer cluster with ARRA funds that incorporates graphic processor units to apply to lattice quantum chromodynamics (LQCD) calculations increasing the computing power for LQCD by a factor of five with modest cost.
- The Laboratory provides leadership in the topics of medium energy through meetings and workshops; serves in organizational roles for national and international conferences, meetings, and workshops.
- The SRF and cryogenic groups are recognized for their expertise world-wide. CASA research is internationally respected.
- The Laboratory staff and facilities provide a sustained level of peer-reviewed journal papers, patents and patent disclosures, and invited talks.

The scores and grades for Goals 1-3 are based on the 2010 CEBAF Operations Review (peer review), the 2010 National Laboratories Medium Energy Groups' Review (peer review), the 2009 National Laboratories Theory Groups' Review (peer review) and follow-up, communication to NP at the February Laboratory Managers' Briefings and Supplemental Information, biweekly teleconferences, regular one-on-one discussions with the Laboratory Director, and NP program managers' site visits, observations at national meetings, and their judgments.

### Workforce Development for Teachers and Scientists (WDTs)

- The Science Education office at JLab has consistently, and especially during FY 2009, managed excellent science education programs for WDTs. Students, undergraduates and educators, including many in typically under-represented groups, receive individualized attention and instruction that ensures their success. Programmatically, JLab meets or exceeds all expectations of participants.
- The methods used to communicate science content and best practices in science education are creative, engaging, collaborative and systematic. Students and educators are placed in challenging research positions and supported through workshops and lectures that directly relate to the content knowledge required for their specific research projects.
- All participants are provided the complete range of resources needed for an exceptional laboratory research experience including individual support for content knowledge growth and assistance in the development of reference materials for educators that are appropriate to teaching complicated science concepts at various grade levels.

The science education program has dedicated itself to providing extensive science education and uses multiple opportunities to deliver the greatest learning impact to participants. Learning is focused on both science content and science pedagogy through mentor intensive research experiences, collaboration with other students and teachers, topical seminars, and enjoyable, engaging inquiry based activities. The dedicated staff is creative but disciplined and by maintaining an interactive relationship with current and previous program participants is able to extend the mentor relationship to promote ongoing learning.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
<b>Basic Energy Sciences</b>					
1.1 Science and Technology Results Provide Meaningful Impact on the Field			0.0%	0.00	
1.2 Provide Quality Leadership in Science and Technology			0.0%	0.00	
1.3 Provide and Sustain Outputs that Advance Program Objectives & Goals			0.0%	0.00	
1.4 Provide for Effective Delivery of Products			0.0%	0.00	
				<b>Total</b>	0.00
<b>Biological and Environmental Research</b>					
1.1 Science and Technology Results Provide Meaningful Impact on the Field	B+	3.1	30.0%	0.93	
1.2 Provide Quality Leadership in Science and Technology	B+	3.1	20.0%	0.62	
1.3 Provide and Sustain Outputs that Advance Program Objectives & Goals	B+	3.1	20.0%	0.62	

1.4 Provide for Effective Delivery of Products	B+	3.1	30.0%	0.93	
				<b>Total</b>	3.10
<b>Nuclear Physics</b>					
1.1 Science and Technology Results Provide Meaningful Impact on the Field	A-	3.6	35.0%	1.26	
1.2 Provide Quality Leadership in Science and Technology	A-	3.6	25.0%	0.90	
1.3 Provide and Sustain Outputs that Advance Program Objectives & Goals	A-	3.6	25.0%	0.90	
1.4 Provide for Effective Delivery of Products	B+	3.4	15.0%	0.51	
				<b>Total</b>	3.57
<b>Workforce Development for Teachers and Scientists</b>					
1.1 Science and Technology Results Provide Meaningful Impact on the Field	A	4.0	25.0%	1.00	
1.2 Provide Quality Leadership in Science and Technology	A	3.9	30.0%	1.17	
1.3 Provide and Sustain Outputs that Advance Program Objectives & Goals	A	3.8	30.0%	1.14	
1.4 Provide for Effective Delivery of Products	A-	3.6	15.0%	0.54	
				<b>Total</b>	3.85

**Table 1.1 - 1.0 SC Program Office Performance Goal Score Development**

Science Program Office	Letter Grade	Numerical Score	Weight	Weighted Score	Overall Score
<b>Basic Energy Sciences</b>			0.0%		
<b>Biological and Environmental Research</b>	B+	3.1	0.7%	0.02	
<b>Nuclear Physics</b>	A-	3.6	98.7%	3.55	
<b>Workforce Development for Teachers and Scientists</b>	A	3.9	0.6%	0.02	
				<b>Total</b>	3.59

**Table 1.2 – SC Program Office Overall Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
				<b>Total</b>	0.00

**Table 1.3 - 1.0 SC Program Office Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	Weight	Weighted Score	Overall Score
<b>Office Of Science</b>	A-	3.6	100.0%	3.60	
				<b>Total</b>	3.60

**Table 1.4 – Overall Performance Goal Score Development**

<b>Score</b>	<b>0.1-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 1.5 – 1.0 Goal Final Letter Grade**

**Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities**

**The Contractor provides effective and efficient strategic planning; fabrication, construction and/or operations of Laboratory research facilities; and are responsive to the user community.**

**The weight of this Goal is 40.0%**

**Objectives**

**2.1: Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

**2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)**

**2.3: Provide Efficient and Effective Operation of Facilities**

**2.4: Utilization of Facility to Grow and Support Lab's Research Base and External User Community**

*SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.*

**Basic Energy Sciences (BES)**

**Biological and Environmental Research (BER)**

**Nuclear Physics (NP)**

- Established a methodology to plan and document cost reductions; the Laboratory has identified eight areas of recent or ongoing cost reductions, and plans to optimize staff. The 12 GeV CEBAF Upgrade Project is making excellent progress with adequate cost and schedule contingency.
- The Project has incorporated installation and commissioning of two cryomodules into its baseline schedule, and several civil/conventional facilities have been completed ahead of schedule.
- The Project is actively managing high risk aspects of the project, the Hall B Silicon Vertex Tracker and the Hall D Solinoid Superconducting Magnet.
- The Continuous Electron Beam Accelerator Facility had excellent reliability; the average effective beam delivered was below the 80% goal for two of the three Halls.
- Facility operational budgets appear adequate and reasonably balanced to achieve near term goals.
- The facility has a large, international user community that is well satisfied. Work-for-others (mainly non-NP accelerator R&D) is synergistic with NP programs and valuable to other Programs

**Workforce Development for Teachers and Scientists (WDTs)**



Science Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
<b>Basic Energy Sciences</b>					
2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities)			0.0%	0.00	
2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components			0.0%	0.00	
2.3 Provide Efficient and Effective Operation of Facilities			0.0%	0.00	
2.4 Utilization of Facility to Grow and Support Lab's Research Base and External User Community			0.0%	0.00	
				<b>Total</b>	0.00
<b>Biological and Environmental Research</b>					
2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities)			0.0%	0.00	
2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components			0.0%	0.00	
2.3 Provide Efficient and Effective Operation of Facilities			0.0%	0.00	
2.4 Utilization of Facility to Grow and Support Lab's Research Base and External User Community			0.0%	0.00	
				<b>Total</b>	0.00
<b>Nuclear Physics</b>					
2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities)			0.0%	0.00	
2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components	A-	3.6	35.0%	1.26	
2.3 Provide Efficient and Effective Operation of Facilities	B+	3.4	50.0%	1.70	
2.4 Utilization of Facility to Grow and Support Lab's Research Base and External User Community	A-	3.5	15.0%	0.53	
				<b>Total</b>	3.49
<b>Workforce Development for Teachers and Scientists</b>					
2.1 Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities)			0.0%	0.00	
2.2 Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components			0.0%	0.00	
2.3 Provide Efficient and Effective Operation of Facilities			0.0%	0.00	

2.4 Utilization of Facility to Grow and Support Lab's Research Base and External User Community			0.0%	0.00	
				<b>Total</b>	0.00

**Table 2.1 - 2.0 SC Program Office Performance Goal Score Development**

Science Program Office	Letter Grade	Numerical Score	Weight	Weighted Score	Overall Score
Basic Energy Sciences			0.0%		
Biological and Environmental Research			0.0%		
Nuclear Physics	A-	3.5	100.0%	3.50	
Workforce Development for Teachers and Scientists			0.0%		
				<b>Total</b>	3.50

**Table 2.2 – SC Program Office Overall Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
				<b>Total</b>	0.00

**Table 2.3 - 2.0 SC Program Office Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	Weight	Weighted Score	Overall Score
Office Of Science	A-	3.5	100.0%	3.50	
				<b>Total</b>	3.50

**Table 2.4 – Overall Performance Goal Score Development**

Score	0.1-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+

**Table 2.5 – 2.0 Goal Final Letter Grade**

### **Goal 3.0: Provide Effective and Efficient Science and Technology Program Management**

The Contractor provides effective program vision and leadership; strategic planning and development of initiatives; recruits and retains a quality scientific workforce; and provides outstanding research processes, which improve research productivity.

The weight of this Goal is 20.0%

#### **Objectives**

#### **3.1: Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

### **3.2: Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

### **3.3: Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

*SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.*

#### **Basic Energy Sciences (BES)**

BES-supported accelerator R&D related research at JLab, initiated in FY 2010, is in an early phase of development. The project is progressing well, even though no assessment or formal review of progress has been conducted.

#### **Biological and Environmental Research (BER)**

TJNAF has been effective in managing limited resources by leveraging expertise and resources within the lab to accomplish their goals

#### **Nuclear Physics (NP)**

- TJNAF has an articulated mission statement, vision, and 5-year strategic plan; the management engages a variety of external and internal groups for guidance to set scientific goals.
- The TJNAF scientific goals are well aligned with those of the nuclear physics program. Work-for-others exploits core competencies that are a resource for other DOE laboratories.
- The Laboratory is effectively managing the requirement to complete the 6 GeV experimental program while building the 12 GeV CEBAF Upgrade Project.
- Communications with the NP Office could be improved, with requests for information sometimes not resulting in clear responses to requested information.

#### **Workforce Development for Teachers and Scientists (WDTS)**

- JLab has done an excellent job of advancing the mentor culture at the laboratory. By hosting mentor workshops, supporting students and educators in their laboratory research, ensuring positive research relationships between mentor and intern, and providing technical and administrative support so that interns can work effectively, the JLab staff has maintained an education program that performs at a consistently high level.
- The office has focused time and talent on operating as a well-integrated team producing results that demonstrate a significant increase in productivity where student outputs are of superior quality and the research experience is a rich and productive one for mentee and mentor alike.
- The undergraduate and educator programs are among the best-in-class. Participants are fully supported with individual attention in content knowledge and the skills training needed to ensure that all deliverables are of excellent quality. A peer-to-peer culture where collaboration is the key component for individual and collective accomplishment is fostered.
- The education office persists in efforts to include participants from diverse populations in WDTS supported programs.

The education staff by example and action creates a culture among its participants that success of the group is in part contingent upon the success of the individuals.

Educators and undergraduate interns collaborate and leverage talent with one another with the same level of commitment of their research mentor.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
<b>Basic Energy Sciences</b>					
3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision			0.0%	0.00	
3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management			0.0%	0.00	
3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs			0.0%	0.00	
				<b>Total</b>	0.00
<b>Biological and Environmental Research</b>					
3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision	B+	3.1	20.0%	0.62	
3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management	B+	3.1	30.0%	0.93	
3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs	B+	3.1	50.0%	1.55	
				<b>Total</b>	3.10
<b>Nuclear Physics</b>					
3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision	A-	3.5	40.0%	1.40	
3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management	A-	3.6	35.0%	1.26	
3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs	B	3.0	25.0%	0.75	
				<b>Total</b>	3.41
<b>Workforce Development for Teachers and Scientists</b>					
3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision	A-	3.6	20.0%	0.72	
3.2 Provide Effective and Efficient Science and Technology Project/Program Planning and Management	A	3.9	40.0%	1.56	

3.3 Provide Efficient and Effective Communications and Responsiveness to Customer Needs	A-	3.7	40.0%	1.48	
				<b>Total</b>	3.76

**Table 3.1 - 3.0 SC Program Office Performance Goal Score Development**

Science Program Office	Letter Grade	Numerical Score	Weight	Weighted Score	Overall Score
Basic Energy Sciences			0.0%		
Biological and Environmental Research	B+	3.1	0.5%	0.02	
Nuclear Physics	B+	3.4	98.9%	3.36	
Workforce Development for Teachers and Scientists	A	3.8	0.6%	0.02	
				<b>Total</b>	3.40

**Table 3.2 – SC Program Office Overall Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
				<b>Total</b>	0.00

**Table 3.3 - 3.0 SC Program Office Performance Goal Score Development**

HQ Program Office	Letter Grade	Numerical Score	Weight	Weighted Score	Overall Score
Office Of Science	B+	3.4	100.0%	3.40	
				<b>Total</b>	3.40

**Table 3.4 – Overall Performance Goal Score Development**

Score	0.1-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+

**Table 3.5 – 3.0 Goal Final Letter Grade**

#### **Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory**

This Goal evaluates the Contractor Leadership capabilities in leading the direction of the overall Laboratory, the responsiveness of the Contractor to issues and opportunities for continuous improvement, and corporate office involvement/commitment to the overall success of the Laboratory.

The weight of this Goal is 20.0%

This Goal evaluates the Contractor's capabilities and performance in leading the direction of the overall Laboratory, the responsiveness of the Contractor to issues and opportunities for continuous improvement, and corporate office involvement/commitment to the overall success of the Laboratory.

The overall grade assigned for this Goal is B+. SC's assessment of this Goal is provided with respect to each of the three Performance Objectives.

#### **4.1: Leadership and Stewardship of the Laboratory**

TJNAF is carrying out a world-class program in the quark structure of the nucleon and nuclei, nuclear structure, and tests of physics beyond the standard model. The Laboratory continues to have an aggressive vision for its future, and is doing a good job of implementing the 12 GeV Upgrade Project. SC looks forward to seeing TJNAF's plans for the future beyond the 12 GeV Upgrade Project and its efforts to work with the scientific community to develop a scientific case for an electron ion collider.

The Laboratory has maintained excellent relations with the State of Virginia and other key stakeholders to carry out its vision and, furthermore, the Contractor has continued to effectively utilize the JSA Initiatives Fund to support to Department's and the Laboratory's missions and goals. If TJNAF successfully executes its strategic plan, it will be positioned to be world-leading into the next decade.

For FY 2010, three notable outcomes were identified for this Objective for TJNAF with respect to its vision and plan for the future:

**Notable Outcome: Laboratory leadership will develop a strategic plan for the future scientific and technical activities of the Laboratory, which aligns with Office of Science and Department goals, and a detailed strategy for executing the plan during the next 2-5 years.**

This notable outcome was met. The TJNAF leadership has developed a strategic plan for the future scientific and technical activities of the Laboratory which characterizes how its core capabilities are central to its ability to deliver on the various SC program missions. The way in which the Laboratory described the unique and/or world-leading component of its core capabilities is well-aligned with SC NP's view of its expertise in those areas. SC approved TJNAF's strategic plan in June 2010.

**Notable Outcome: Laboratory leadership will provide a strategy for its Work for Others (WFO) program; the WFO program should align with and support Office of Science, Department, and Laboratory goals.**

This notable outcome was met. The Laboratory provided a strategy for its WFO program in its annual laboratory plan for SC which accurately reviews the role of WFO in TJNAF's current scientific activities and outlines feasible extensions for FY 2011. In addition, it articulates how the Laboratory focuses on WFO activities with the potential to leverage and contribute to its current core mission and capabilities.

**Notable Outcome: Laboratory leadership must demonstrate there is a plan for dealing with the potential consequences of either a successful or an unsuccessful bid to expand the Navy's WFO program.**

This notable outcome was met. Although the Navy's R&D program is transitioning to industry with TJNAF supporting advanced research and development at a lower level of effort than in the past, the Laboratory secured funding in FY 2010 to support its Free Electron Laser program from such sources as the Office of Naval Research, Navy INP, and from a Jefferson Lab/Industry CRADA. It will likely be challenging, however, for TJNAF to establish a long-term funding source for this program.

## 4.2: Management and Operation of the Laboratory

The Contractor provided for responsive and accountable leadership for TJNAF during the performance period, as evidenced by its performance against the one notable outcome identified for this Objective for FY 2010, as well as other areas of notable performance.

**Project Management.** Under JSA's management, TJNAF has made significant progress in the implementation of projects that are critical to the Laboratory and to the Office of Science. These efforts include the 12 GeV project, the Technology and Engineering Development Facility Projects, and the Utilities Infrastructure Modernization Project, which received a favorable CD-1 review during the year. With the high level of current construction activity at TJNAF, the Laboratory and the Contractor are encouraged to be vigilant in managing safety performance across the Laboratory.

**Communications and Transparency.** The JSA Board and the Laboratory have demonstrated efforts to expand their transparency with the DOE and the Site Office in several meaningful ways during FY 2010, including seeking Site Office input during Board and committee meetings on Corporate and Laboratory progress. SC and the Site Office look forward to working closely with the JSA Board and Laboratory to find opportunities to further enhance this partnership.

**Outreach.** The Laboratory has demonstrated significant efforts to raise public awareness of the importance of the Jefferson Lab to local, regional, state, and national stakeholders; these efforts were supported by SURA, which provided help facilitate state and local participation and awareness of Laboratory activities. On May 1, 2010, for example, the Laboratory conducted a very successful Open House in which over 7,000 members of the local community visited TJNAF. In addition, TJNAF's science education metrics for this reporting period continue to be outstanding with interactions with over 11,000 students and 2,300 teachers. The Jefferson Lab Science Education program continues to serve as a model program within SC.

For FY 2010, one notable outcome was identified for this Objective for TJNAF:

**Notable Outcome:** Laboratory leadership will make significant progress in defining and implementing its contractor assurance system. It is expected that a collaborative and uniform approach to this issue among all contractors will be evident.

This notable outcome was met. The Laboratory provided a well thought out contractor assurance system (CAS) presentation to the Thomas Jefferson Site Office, which provided the opportunity for meaningful discussions on TJNAF's CAS approach. The Site Office is looking forward to continued progress in finalizing the JSA's CAS program description. In addition, the TJNAF Chief Operating Officer played an important role in implementing CAS across the SC laboratory complex.

## 4.3: Contractor Value-added

The Contractor demonstrated efforts to support TJNAF in several notable areas in FY 2010, in particular with respect to the engagement of the JSA Board in a number of ongoing activities at the Laboratory, as well as in providing responsible leadership for TJNAF and in holding the Laboratory accountable for its performance.

**Corporate Support.** The Contractor provided corporate support to the Laboratory through several mechanisms. The JSA Board meets semi-annually to review reports from its committee chairs and to receive updates on such things as TJNAF's financial status, programmatic activities, plans for the future with respect to the FEL and SRF technology, progress on the 12 GeV Upgrade Project,; laboratory evaluation and PEMP results, and environment, safety and health performance. These meetings, as well as JSA Board committee meetings, also provided a good opportunity for the Site Office to exchange information with the Contractor about TJNAF's performance.

The SURA Chief of Strategic Services continued to meet with the TJSO Acting Site Manager on a monthly basis to discuss the activities of the JSA Board, committees, and JSA corporate. The Computer Sciences Corporation (CSC) also continued to provide TJNAF with a suite of technology and business management tools that integrate the Laboratory's management data and provide ongoing insight into Laboratory performance through a secure web-based portal, as well as provided a cyber-security team to conduct on- and off-site penetration tests of Laboratory web servers and networks evaluating potential compromises to the system. In addition, CSC is working with the TJNAF internal auditor to conduct independent assessment of auditing standards.

**JSA Initiatives Fund.** The JSA Program Committee provided TJNAF with \$538,000 through the JSA Initiatives Fund in support of 27 projects at the Laboratory which may otherwise not be implemented and/or with goals that may otherwise not be achievable. One of the compelling aspects of the Initiatives Fund is that the majority of the projects approved return more value to the Laboratory than the total investment of dollars. \$370,000 in matching funds from other sources were also acquired to support these activities.

For FY 2010, one notable outcome was identified for this Objective for TJNAF:

**Notable Outcome:** The contractor will fill all key leadership positions at the Laboratory in a timely manner.

This notable outcome was met. The Contractor filled key leadership positions during FY 2010, including the Deputy Director for Science and Technology and Associate Director for Theoretical and Computational Physics positions.

Element	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory					
4.1: Leadership and Stewardship of the Laboratory	B+	3.3	33.0%	1.09	
4.2: Management and Operation of the Laboratory	B+	3.3	33.0%	1.09	
4.3: Contractor Value-added	B+	3.3	34.0%	1.12	
				<b>Total</b>	3.30

**Table 4.1 - 4.0 SC Program Office Performance Goal Score Development**

Score	0.1-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+

**Table 4.2 – 4.0 Goal Final Letter Grade**

**Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection**

This Goal evaluates the Contractor overall success in deploying, implementing, and improving integrated ES&H systems that efficiently and effectively support the mission(s) of the Laboratory.

The weight of this Goal is 25.0%



The Department has assigned an overall grade of B+ for this performance goal. Overall, the Department concurs with the Laboratory's self-assessment of performance for Goal 5.0, including the Laboratory's acknowledgement of FY 2010 challenges to be addressed in the coming fiscal year. At the end of the first Quarter of this fiscal year, the Department engaged the Laboratory to help improve communications between our organizations, specifically within the ES&H functional area. Since then, incremental improvements have been noted in this area. It is hopeful that this trend continues, thereby supporting the mutual trust necessary to fully implement CAS. The Department is committed to provide the necessary environment to facilitate the Laboratory's pursuit of its ES&H performance goals in FY 2011. Comments are contained within the individual objectives that follow.

### **5.1: Provide a Work Environment that Protects Workers and the Environment**

The Department has assigned an overall grade of B+ for this objective based on the following:

*Notable Outcome 5A – Achievement of positive workplace health and safety trends, as evidenced by continued emphasis on timely employee reporting of issues, events and incidents as measured by the use of leading and lagging indicators (e.g., Reportable Injury Cases, Notable Events, Workplace Safety Observation Activity/Participation, First Aid Cases), and subsequent analysis and continuous improvement efforts.*

The Laboratory's progress in addressing shortcomings identified by the Department in the FY 2009 PEMP assessment have largely been successful, and any residual performance gaps have been identified for tracking and closure. The Department is appreciative of the progressive maturation of the event investigation program. The investigation of some events by the Laboratory was recognized by the Department as objective, timely and self-critical. Furthermore the corresponding corrective actions from those investigations demonstrated a comprehensive perspective. Cultivating such performance across the various Divisions will greatly aid the Laboratory in strengthening its assurance program. Areas warranting enhancement within the event investigation process includes evaluating side-wide applicability for conditions and events that originate at construction projects. Additionally, inefficiencies persist when "pre-critiques" are organized outside of the normal management response to status and stabilize an event scene.

The Laboratory's Lessons Learned program has sustained admirable performance relative to its peers. The Department recognizes this performance for a number of reasons, not the least of which is that the performance quota on the lessons learned program was removed from the PEMP in FY 2010. This sustained performance likely reflects that the Laboratory's commitment to lessons learned has become an integrated component of its overall operations, consistent with the principles of ISM. The number of internally distributed Lesson's Learned is impressive, and the maturity of the program is further reflected in the number of Lesson Learned being submitted into the DOE system. The Site Office is appreciative of the collegial relationship that exists for TJSO suggested lesson learned topics that are developed formally and routed for laboratory-wide consideration. The Laboratory is encouraged to keep lessons learned relevant and focused to attract the attention of line level staff in FY 2011, especially with the competing demands imposed by the 12 GeV upgrade project, the TEDF project, and the general campus-wide construction.

The Laboratory's decision to declare a Recurrent ORPS condition following a series of excavation related utility strikes is regarded by the Site Office as a prudent acknowledgment of a program vulnerability. It is clear that these events not only have the potential for significant ES&H consequences, but also directly impact the science mission and project schedules. It is important that a high degree of transparency be sustained between the Laboratory and the Department for future utility strike investigations, trending, causal analysis and corrective action development. When programmatic vulnerabilities are identified, the Laboratory's risk-based assessment planning tool should be reassessed to ensure the risk-ranking reflects the operational experience.

## **5.2: Provide Efficient and Effective Implementation of Integrated Safety, Health and Environment Management**

The Department has assigned an overall grade of B+ for this objective based on the following:

*Notable Outcome 5B – Assure subcontractors achieve acceptable safety and health (S&H) performance through an effective subcontractor management and Subcontracting Officer's Technical Representative (SOTR) leadership (Reference: JLab Web based Subcontracting Officer's Technical Representative (SOTR) Guidelines document), with special focus on construction related work.*

*Notable Outcome 5C– Demonstrate the effectiveness of a risk-based ES&H assessment process by developing a risk-based assessment identification process and begin implementation in FY10.*

*Notable Outcome 5D – Demonstrate that ES&H vulnerabilities are addressed through the Lab's issues management process that includes evidence that effectiveness reviews are being completed to confirm adequacy of root cause elimination for the most significant risks.*

The transition to the Employee Job Task Analysis (EJTA) system is regarded as having significantly improved the quality of the Laboratory's employee qualifications and training management system. Additional noteworthy initiatives that demonstrate a sustained commitment by the Laboratory to improving worker safety include the pre-SAD safety briefing and Lessons Learned presentation, and the site orientation visits coordinated with the Newport News Fire Department.

As part of the Quarterly PEMP feedback, the Department noted that a disproportionately high number of TJSO identified findings were either being prematurely closed in Jefferson Lab's Corrective Action Tracking System (CATS), or insufficient objective evidence was presented to demonstrate satisfactory closure. The Laboratory evaluated this concern and concurred that improvements in this area were warranted. One of the Laboratory's proposed corrective actions to address this matter was to make CATS entries very clear on what objective evidence is necessary to support closure; furthermore, the out-brief for the effectiveness review of HSS Finding D-2 identified a similar problem of poor CATS closure evidence. Corrective Action Plans from the D-2 assessment are still under development.

## **5.3: Provide Efficient and Effective Waste Management, Minimization, and Pollution Prevention**

The Department has assigned an overall grade of B+ for this objective based upon overall performance and the following:

*Notable Outcome 5E– Strengthen the Environmental Management System (EMS) by refining the significant aspects list, and including expectations associated with environmental stewardship and sustainability. Continue to document and demonstrate system improvements in the EMS, as identified in JLab's EMS Validation Corrective Action Plan*

The Department recognizes satisfactory achievement of this measure.

An EMS Validation audit conducted in the third quarter of 2009 resulted in two findings, but found no major non-conformances. The Laboratory completed all corrective actions by the end of the first quarter 2010.

Construction activity increased significantly in 2010. There were two minor environmental permit non-compliances associated with construction activity. Neither resulted in a notice of violation. In both cases the Laboratory did respond according to its established processes with a thorough investigation and a corrective action plan. One outcome was an increase in environmental inspections, with findings from these inspections entered into CATS. The Environmental Department also scheduled routine meetings with the construction project SOTRs to discuss inspection findings. This demonstrates improvement in the area of tracking, trending, and lessons learned.

There were three external environmental assessments conducted during this fiscal year. One was an unannounced EPA inspection. The assessments were focused on erosion and sediment control of construction sites and the Laboratory's stormwater management program. There were no serious findings.

The Laboratory is on track again this year to receive the "Gold Award" from the local Sanitation district. The award recognizes the perfect compliance record for Industrial Wastewater Management for the calendar year 2010.

Element	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection					
5.1: Provide a Work Environment that Protects Workers and the Environment	B+	3.3	20.0%	0.66	
5.2: Provide Efficient and Effective Implementation of Integrated Safety, Health and Environment Management	B+	3.3	70.0%	2.31	
5.3: Provide Efficient and Effective Waste Management, Minimization, and Pollution Prevention	B+	3.3	10.0%	0.33	
				<b>Total</b>	<b>3.30</b>

**Table 5.1 - 5.0 SC Program Office Performance Goal Score Development**

Score	0.1-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+

**Table 5.2 – 5.0 Goal Final Letter Grade**

**Goal 6.0: Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)**

**This Goal evaluates the Contractor overall success in deploying, implementing, and improving integrated business systems that efficiently and effectively support the mission(s) of the Laboratory.**

**The weight of this Goal is 20.0%**

The Department has assigned an overall grade of B+ for this performance goal. Comments are contained within the individual objectives that follow.

**6.1: Provide an Efficient, Effective, and Responsive Financial Management System(s)**

The Department has assigned an overall grade of B+ for this objective based on the following:

The Laboratory's business processes performed well in insuring that costs and commitments did not exceed available funding and that regular accounting and budget reports were accurate and timely throughout the year. The JSA CFO organization maintains strong control and accountability of funds

processes. JSA met the FY 2010 Office of Management and Budget Circular A-123, Appendix A requirements. Financial attestation letters were submitted timely and reflected no financial management internal control weaknesses. The annual management representation letter needed to support DOE's audit of the 2010 consolidated financial statements was provided in a timely manner.

*Notable Outcome 6A – No material/major findings from internal/external audits and/or reviews or from Management Control Program findings (as defined in DOE Order 413.1A, Attachment 2).*

External and internal audits and reviews conducted in FY 2010 disclosed no material weaknesses and there were no material/major findings reported. Reviews of internal controls required by OMB Circular A-123 were completed timely with no major issues. The accounting for ARRA funds required no major changes to the Laboratory's accounting systems and the Laboratory was able to respond ARRA reporting requirements in a timely and accurate manner.

## **6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System**

The Department has assigned an overall grade of B+ for this objective based on the following:

*Notable Outcome 6B – Demonstrate an effective procurement systems as evidenced by achieving a Procurement Balance Scorecard Total >89 (Excellent).*

The FY 2010 Procurement Balanced Score Card (BSC) total score as of August 31, 2010, was 89 points out of a possible 100 points, which utilizes DOE's Core Performance Measures as the basis of the assessment. The targets under the various BSC performance metrics are based on national (and/or negotiated) targets issued by DOE's Office of Procurement Assistance Management. A score of 89% meets the criteria of Notable Outcome 6B and was a challenge given the large influx of dollars and requirements related to ARRA, the start of the 12 GeV Upgrade project as well as SLI projects, which will continue into FY 2011.

*Notable Outcome 6C – Demonstrate an effective small business outreach as evidenced by achievement of Small Business Subcontracting Plan goals.*

The Laboratory exceeded the Small Business, Women-owned and Disadvantaged goals and missed their Service Disabled and HubZone goals. FY 2010 was a challenging year given the unanticipated impact of the ARRA and SLI funding as well as the start of the 12 GeV Upgrade Project. Overall, the Laboratory has done an excellent job in striving to meet these goals while balancing DOE requirements related to ARRA, SLI funding and 12 GeV Project responsibilities. The Laboratory continues to work with Mentor Protégé companies to advance their overall growth potential, and a new Mentor Protégé agreement with NSC Technologies, Inc. (a small business firm) was sent to DOE for approval on September 21, 2010. This company will provide contract labor personnel for Jefferson Lab and will develop an online timesheet reporting system. The Laboratory continues to demonstrate an effective small business outreach program and has met the criteria of Notable Outcome 6C.

## **6.3: Provide an Efficient, Effective, and Responsive Property Management System**

The Department has assigned an overall grade of B+ for this objective based on the following:

*Notable Outcome 6D – Demonstrate stewardship of DOE property as evidenced by achieving an Annual Property Balanced Scorecard Composite Score greater than or equal to 93 points.*

Property Balanced Scorecard Composite score for this reporting period is 94.1%. With this score the Laboratory has met the required level of performance for Notable Outcome 6D. Results achieved include 100% for Internal Customer Satisfaction (FY 2010 Goal = 80%); 99% for Property Inventory Accuracy – Equipment/Sensitive (FY 2010 Goal = 98%); and 0.01% for Annual Stockroom Inventory Variance (FY 2010 Goal ≤ 1%).

The Contractor's Property Management function has undergone a major personnel turnover this year, with the retirement, and replacement, of the Property Officer, and the retirement of his principal assistant. There have been no apparent difficulties resulting from these changes, with required reporting being accomplished without delays or notable errors.

The Laboratory continues its efforts to increase awareness and understanding of the responsibilities and accountability of all employees for protection and use of Government property, and emphasize the need to follow established procedures in the approved Property Management System. The success of these efforts is indicated by the continued small number of property items reported as Lost, Damaged, or Destroyed (LDD). These numbers are a small percentage of the total inventory, but provide a good indicator of the improvements and quality of management of the Property system. The number of LDD reported property items dropped from a total of 39 items in 2007 to 11 items in 2008, 12 in 2009, and currently at 13 in 2010. With continued emphasis on individual responsibility, this level of accountability is expected to remain stable for 2011.

#### **6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program**

The Department has assigned an overall grade of B+ for this objective based on the following:  
The Human Resource function provides professional services and is responsive to the needs of the employees and management. In FY 2010, Human Resources responded to a major DOE CFO data call for benefits information in a timely manner. Information was used by the CFO for centralizing and comparing benefits information across all the laboratories. Human Resources continued to develop and improve their processes in areas such as training, recruiting, and diversity.

*Notable Outcome 6E – Demonstrate progress in enhancing the diversity of the Lab's workforce and foster an inclusive environment.*

The Laboratory continues to take positive steps to make diversity and inclusiveness a major commitment and emphasis area. By attending job and career fairs, partnering with local colleges, hosting workshops and utilizing social networking sites, the Laboratory is demonstrating initiative in this DOE interest area. A baseline from which to measure progress should be established and tracked in the future so results of the Laboratory's efforts can be documented.

#### **6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; and Other Administrative Support Services as Appropriate**

The Department has assigned an overall grade of B+ for this objective based on the following:  
*Notable Outcome 6F – Demonstrate the adequacy and effectiveness of the organization's governance, risk management processes, systems of internal control, and the quality of performance in carrying out assigned responsibilities through an effective Internal Audit Program.*

The Internal Audit function is being performed in a highly professional manner. Staffing for this function is minimal, yet results and activity are high. Appropriate areas of operations based on risk or DOE interest are being reviewed and reported on in accordance with audit plans and DOE direction.

There were several Information Technology (IT) initiatives implemented by the Laboratory that contributed to the overall productivity and efficiencies of the Laboratory. Enhancements were made to the CATS (Corrective Action Tracking System) system. New IT applications were developed and deployed for training and conducting salary reviews. These helped improve Laboratory efficiencies and productivity.

*Notable Outcome 6G – Implement and maintain an effective Quality Assurance Program as established in the Assurance program Description.*

The Laboratory continued to demonstrate progress in rolling out its risk-based assessment planning tools, especially for the non-ES&H programmatic areas. This initiative is expected to be a cornerstone of the overall Contractor Assurance System.

#### **6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets**

The Department has assigned an overall grade of B+ for this objective based on the following:

This performance objective measures the degree to which key technologies related to Jefferson Laboratory's primary scientific mission are disseminated to industry. Performance takes into account the amount of intellectual property generation and the technology transfer activities. Several Work For Others/Cooperative Research and Development Agreements were entered into this fiscal year.

*Notable Outcome 6H – Demonstrate an effective Technology Transfer activities and intellectual property stewardship as evidenced by the three year average for Invention Disclosures, Patents, and Licenses.*

Two (2) licenses were executed, six patents awarded and twenty-one (21) invention disclosures were submitted related directly to Jefferson Laboratory's core competencies. The License Agreements are with Niowave, Inc. for "Particle Beam Crabbing and Deflecting Structure," and Pohang for "Digital Self Excited Loop for Accelerating Cavity Field Control."

The patents awarded are as follows: 7,663,077 B1 Apparatus For The Laser Ablative Synthesis Of Carbon Nanotubes; 7,671,306 B1 Laser Ablative Synthesis Of Carbon Nanotubes; 7,692,116 B1 Laser Ablation For The Synthesis Of Carbon; 7,732,774 B2 High Resolution Pet Breast Imager With Improved Detection Efficiency; 7,740,362 B1 Mirror With Thermally Controlled Radius Of Curvature; 7,737,874 B1 Method Of Multi-Channel Data Readout And Acquisition.

The Invention Disclosures That Were Submitted Are Listed As Follows: 1260 Turning Mirror Cassette Controller; 1261 A Mechanism For Attaching Multipurpose Collimators To Radiation Imaging Devices; 1262 Fast Neutron Imaging Device And Method; 1263 Actuators And Sensors Fabricated With BNNT; 1264 Oil Flooded Screw Compressor Efficiency Improvements; 1265 Temperature Controlled Articulating High Pressure Feedstock Delivery Device; 1266 Method To Locate In Three Dimension A Particle Emitting Source Using Handheld Detectors; 1267 (Copyright) Design Of Optimal Helium Refrigeration And Liquefaction Systems; 1268 Upconverting Device For Enhanced Recognition Of Certain Wavelengths Of Light; 1269 Upconverting Nanoparticles For Optimizing Scintillator Bases Detection Systems; 1270 An Apparatus And Procedure To Characterize The Surface Quality Of Conductors By Measuring The Rate Of Cathode Emission As A Function Of Surface Electric Field Strength; 1271 Vme 16 Channel Dual Threshold Leading-Edge Discriminator/Scaler/Trigger Module; 1272 A Practical Method And Device For Enhancing Pulse Contrast Ratio For Lasers And Electron Accelerators; 1273 A Method For Generating High Energy And High Repetition Rate Laser Pulses From Cw Amplifiers; 1274 Vme 16 Channel Programmable Delay Module 1275 High Brightness High Current Electron Gun; 1276 Large Acceptance Recirculating Linac With Ftag (Fixed Field Alternating Gradient) Arcs; 1277 Bxcynz Nanotube Formation Via The Pressurized Vapor/Condenser Method; and, 1278 Efficient Boron Nitride Nanotube (Bnnt) & Bxcynz Nanotube Formation Via Combined Laser-Gas Flow Levitation.

This is a significant accomplishment and has meet the criteria of Notable Outcome 6H.

Element	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
Goal 6.0: Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)					
6.1: Provide an Efficient, Effective, and Responsive Financial Management System(s)	B+	3.4	15.0%	0.51	
6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System	B+	3.2	15.0%	0.48	
6.3: Provide an Efficient, Effective, and Responsive Property Management System	B+	3.3	15.0%	0.50	
6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program	B+	3.4	15.0%	0.51	
6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; and Other Administrative Support Services as Appropriate	B+	3.4	25.0%	0.85	
6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets	B+	3.4	15.0%	0.51	
				<b>Total</b>	3.36

**Table 6.1 - 6.0 SC Program Office Performance Goal Score Development**

Score	0.1-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+

**Table 6.2 – 6.0 Goal Final Letter Grade**

**Goal 7.0: Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs**

This Goal evaluates the overall effectiveness and performance of the Contractor in planning for, delivering, and operations of Laboratory facilities and equipment needed to ensure required capabilities are present to meet today and tomorrow mission(s) and complex challenges.

The weight of this Goal is 20.0%

The Department has assigned an overall grade of A- for this performance goal. Overall performance exceeds expectations of performance as set by the Objectives and Notable Outcomes with some areas of notable increased performance and no notable areas of diminished performance. Comments are contained within the individual objectives that follow.

#### **7.1: Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs**

The Department has assigned an overall grade of A- for this objective based on the following:

Performance trends and outcomes of the Jefferson Lab facility and infrastructure programs are showing continuous improvement. In addition to performance on the Notable Outcomes, the Laboratory is demonstrating initiative by developing a 2020+ Land Use Plan and improving efficiency of operations by improving space management and work request systems. Evaluation of the Notable Outcomes and comments on how they were considered in the objective score follow.

*Notable Outcome 7A – Successfully implement the Mission Readiness Program as validated by the Peer Review scheduled for FY 2010.*

The Department has determined that the performance on this Notable Outcome is exceeding expectations. The Mission Readiness Peer Review was very successful with the review team validating full implementation of a Mission Readiness Program and identifying 13 strengths of the Jefferson Lab Mission Readiness Program. Items identified for Jefferson Lab to consider were also positive and building on existing systems.

*Notable Outcome 7B – Implement the FY2010 corrective measures as described in the current Corrective Action Plan for the TJSO Final Report – Fire Protection Program Assessment of TJNAF – May 2008 assessment.*

The Department has determined that the performance on this Notable Outcome meets expectations. The FY 2010 Corrective Action Plan for the 2008 Fire Protection Program Assessment was successfully implemented during the fiscal year.

#### **7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to support the Continuation and Growth of Laboratory Missions and Programs**

The Department has assigned an overall grade of A- for this objective based on the following:

The Laboratory's facility and infrastructure planning, forecasting, and acquisition is integrated and aligned with capabilities and comprehensive strategic planning. In addition to performance on the Notable Outcome for this objective, the Laboratory is demonstrating higher performance by effectively integrating American Recovery and Reinvestment Act General Plant Projects with the ongoing Modernization projects for synergistically enhanced results thereby transforming the Jefferson Lab campus. The Independent Project Review for the Utilities Infrastructure Modernization project was very positive and the project is being considered as a model for streamlining the critical decision process on other modernization projects. Evaluation of the Notable Outcome and comments on how it was considered in the objective score follow.

*Notable Outcome 7C – Demonstrate effective technical, schedule, and cost management and performance for the Technology and Engineering Development Facility (TEDF) Project and projects equal to or greater than \$1M.*

The Department has determined that performance on this Notable Outcome is exceeding expectations. The TEDF project and projects equal to or greater than \$1M are demonstrating effective technical, schedule and cost performance. The TEDF project team is working closely with customers by implementing a Disruption Avoidance Planning process to ensure work coordination and support of the mission need. This has proven to be extremely valuable in performing work in and around the Test Lab



Building, which is the most active facility on the Jefferson Lab campus. Additionally the TEDF project team demonstrated initiative to obtain approval for all alternates (performance enhancement items) as part of Critical Decision 3.

Element	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
Goal 7.0: Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs					
7.1: Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs	A-	3.6	40.0%	1.44	
7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to support the Continuation and Growth of Laboratory Missions and Programs	A-	3.7	60.0%	2.22	
				<b>Total</b>	3.66

**Table 7.1 - 7.0 SC Program Office Performance Goal Score Development**

Score	0.1-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+

**Table 7.2 – 7.0 Goal Final Letter Grade**

**Goal 8.0: Sustain and Enhance the Effectiveness of Integrated Safeguards and Security management (ISSM) and Emergency Management Systems**

**This Goal evaluates the Contractor overall success in safeguarding and securing Laboratory assets that supports the mission(s) of the Laboratory in an efficient and effective manner and provides an effective emergency management program.**

**The weight of this Goal is 15.0%**

The Department has assigned an overall grade of A- for this performance goal. Comments are contained within the individual objectives that follow:

**8.1: Provide an Efficient and Effective Emergency Management System**

The Department has assigned an overall grade of B+ for this objective based on the following:

*Notable Outcome 8A – Demonstrate an effective Emergency Management System through effective planning, preparation, exercises, drills, test, etc.*

A Laboratory Emergency Management MSA was conducted during this fiscal year and there were two findings and eight opportunities for improvement. The findings were related to emergency training. The OFIs were related to various administrative aspects of the emergency management program. Corrective actions have been identified and are being tracked through Jefferson Lab CATS.

A DOE review was also conducted in the 3rd quarter. The report has recently been transmitted for factual accuracy. The Site Office concurs that the Laboratory has demonstrated its emergency management capabilities. Examples include the Hurricane Earl preparations and the Business Continuity table top exercise. The Laboratory continues to demonstrate an effective emergency management system and has meet the criteria of Notable Outcome 8A.

## **8.2: Provide an Efficient and Effective System for Cyber-Security**

The Department has assigned an overall grade of B+ for this objective based on the following: measures:

*Notable Outcome 8B – Complete all Certification steps in support of the Authority to Operate extension, and request the Accreditation and ATO extension from the Designated Approval Authority.*

The Laboratory made many IT enhancements to enhance the Lab's cyber security posture. Among them is the deployment of Virtual Private Network (VPN) access for remote access to sensitive enclaves from Laboratory managed laptops. Additionally, the Laboratory improved the security of the wireless network that incorporates computer registration and asset management system as well as other security features.

The average number of working days to remediate systems identified by alarms from automated system log filtering and notification process, including the intrusion detection system, was consistently maintained below remediation target during this performance period (Q1-76.12 hrs, Q2-76.33 hrs, Q3-60.55 hrs, Q4-21.25 hrs). The vulnerability scanning program kept critical SANS Top 20 vulnerabilities below 1% (Q1-.33%, Q2-.02%, Q3-.01%, Q4-.04%) In addition there was a successful white hat testing and Integrated Service Center survey. There was a significant increase in both volume and complexity of cyber-attacks on the JLAB network, yet there were no root-level compromises during the rating period on managed systems or any attacks from external systems. On a monthly basis, the Site Office validated statistics through a mixture of walkthroughs, screen observations, reports, and interviews with staff from the CIO to administrators. The Site Office had unfettered access to information during inspections and interviews.

A timeline was established for the certification and accreditation process which was due this fiscal year. However, events outside of the Laboratory's control delayed necessary steps and a later milestone date was agreed upon by the Laboratory and the Site Office. However, a white hat inspection was conducted, and that combined with regular status meetings and a comprehensive risk analysis, provided the (AO) Authorizing Official with reasonable assurance regarding the site's posture. It was evident this fiscal year was filled with many challenges. The Site Office recognized during its operational awareness, constant shifting of manpower, administrators working outside their normal capacity, and unforeseen impacts from other divisions within the Laboratory. The significant amount of construction and new projects has required sacrificing and alternative strategy to pre-construction strategic plans, and each staff member at all levels within the Computer Center has reacted well to adjust to emerging priorities. This is reflected in the performance result of no root compromises.

Most important to note is there is no evidence to indicate that cyber security is negatively impacting the production of science at the Laboratory. There were no incidents in which staff (including scientists) or users were denied access to data or computing capabilities. Malicious attacks which are successful, have the potential to waste tremendous amounts of man hours, e.g., forensic and technical troubleshooting, and the loss of critical computing time for users. This can significantly contribute to an escalation in costs and thus requires proactive strategy to avoid such impacts.

## **8.3: Provide an Efficient and Effective System for the Protection of Special Nuclear Materials, Classified Matter, and Property**

The Department has assigned an overall grade of B+ for this objective based on the following:

The Contractor achieved 100% compliance with the approved TJNAF Nuclear Material Control and Accountability Program. The supporting NMC&A Plan was updated to incorporate recommended changes from the Oak Ridge Office of Security & Emergency Management. The TJNAF Site Security Plan was updated to include sections on Mail Security and Transportation of Hazardous Materials. All changes were approved by the DOE TJSO Manager.

The Contractor participated in several DOE Safeguards and Security workshops and continued their ongoing interactions with the FBI (Norfolk), Homeland Security, local police and fire departments for security planning. The Contractor COO was invited to serve as a member of the SC Safeguards and Security Advisory Committee for a two year term as a special consultant. Several JSA subject matter specialists were offered and accepted partnership in the Tidewater National Security Group which shares information with the FBI Norfolk Field Intelligence Group.

#### **8.4: Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information**

The Department has assigned an overall grade of B+ for this objective based on the following:

*Notable Outcome 8C – Demonstrate an effective program for the protection of Business Sensitive and Personnel Sensitive data with no loss of such information, and by meeting required reporting periods for IT and cyber-related data calls and security events.*

There were no reportable events involving loss of the Lab's Business Sensitive/Personnel Sensitive information during this performance period. Social networking attempts continued to increase which included phishing. These attacks have increased in quality and are more targeted. Social networking sites such as Twitter and Facebook have become increasingly popular. These act as a major source of files which can affect vulnerable systems. Despite strong efforts of the Computer Center, many machines had to be rebuilt this year due to infections. The Laboratory acted proactively with one particular attempt which had site-wide impact. While it is noted that mitigation was put in place, there was high potential for negative impact, and the Laboratory is encouraged to look at methods to enhance general awareness of emerging threats. This also relates to the existence of incidental Personal Identifiable Information on particular data stores.

Element	Letter Grade	Numerical Score	Objective Weight	Weighted Score	Overall Score
Goal 8.0: Sustain and Enhance the Effectiveness of Integrated Safeguards and Security management (ISSM) and Emergency Management Systems					
8.1: Provide an Efficient and Effective Emergency Management System	B+	3.4	25.0%	0.85	
8.2: Provide an Efficient and Effective System for Cyber-Security	B+	3.4	50.0%	1.70	
8.3: Provide an Efficient and Effective System for the Protection of Special Nuclear Materials, Classified Matter, and Property	B+	3.3	10.0%	0.33	
8.4: Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information	B+	3.4	15.0%	0.51	
				<b>Total</b>	3.39

**Table 8.1 - 8.0 SC Program Office Performance Goal Score Development**

<b>Score</b>	<b>0.1- 0.7</b>	<b>0.8- 1.0</b>	<b>1.1- 1.7</b>	<b>1.8- 2.0</b>	<b>2.1- 2.4</b>	<b>2.5- 2.7</b>	<b>2.8- 3.0</b>	<b>3.1- 3.4</b>	<b>3.5- 3.7</b>	<b>3.8- 4.0</b>	<b>4.1- 4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 8.2 – 8.0 Goal Final Letter Grade**

## **APPENDIX**

### **List of programs:**

Nuclear Physics (NP)  
Biological and Environmental Research (BER)  
Workforce Development for Teachers and Scientists (WDTS)  
Basic Energy Sciences (BES)

**Nuclear Physics  
Thomas Jefferson National Accelerator Facility  
FY 2010 Performance Evaluation  
Office of Science**

**Goal 1.0: Provide for Efficient and Effective Mission Accomplishment**

**Weight:** 40.00%

**Score:** 3.57                      **Grade:** A-

**Goal Evaluation:**

- Researchers conducted experiments that provide high impact on the field of nuclear physics: exploration of the EMC Effect, electromagnetic and electroweak properties of nucleons, and searches for excited states of exotic hadrons.
- The Laboratory developed a dedicated computer cluster with ARRA funds that incorporates graphic processor units to apply to lattice quantum chromodynamics (LQCD) calculations increasing the computing power for LQCD by a factor of five with modest cost.
- The Laboratory provides leadership in the topics of medium energy through meetings and workshops; serves in organizational roles for national and international conferences, meetings, and workshops.
- The SRF and cryogenic groups are recognized for their expertise world-wide. CASA research is internationally respected.
- The Laboratory staff and facilities provide a sustained level of peer-reviewed journal papers, patents and patent disclosures, and invited talks.

The scores and grades for Goals 1-3 are based on the 2010 CEBAF Operations Review (peer review), the 2010 National Laboratories Medium Energy Groups' Review (peer review), the 2009 National Laboratories Theory Groups' Review (peer review) and follow-up, communication to NP at the February Laboratory Managers' Briefings and Supplemental Information, biweekly teleconferences, regular one-on-one discussions with the Laboratory Director, and NP program managers' site visits, observations at national meetings, and their judgments.

**Objective 1.1: Science and Technology Results Provide Meaningful Impact on the Field**

**Weight:** 35.00%

**Score:** 3.6                      **Grade:** A-

**Objective Evaluation:**

Recent measurements at Hall C focused on measurements of the so-called EMC (European Muon Collaboration) Effect in order to explore how the structure of nucleons is modified in nuclei. The goal of experiments on H-2, He-3, He-4, Be-9 and C-12 was to differentiate between A dependence or density dependence of the effect. The results for H-2, He-3, He-4, and C-12 suggest that the EMC effect depends more on nuclear density than nuclear size. The results for Be-9 are intriguing with a higher value for the EMC effect. This result may be explained if the unusual clustering of nucleons into alpha particles within Be-9 is taken into consideration. Taken together, these experiments suggest the EMC Effect scales with the local density of the nucleus.

The Medium Energy review panel evaluated the JLab staff research associated with each of the existing three Halls and the preparations for the program in the new Hall D. The JLab research in Hall A and Hall C are evaluated to be in the upper part of the excellent range and the top third of the National Laboratory Groups reviewed. The research proposed in Hall D, and ongoing in Hall B, are in the mid-excellent range, and are in the middle to lower third of those reviewed.

Hall A research has a major impact on the topics of electromagnetic and electroweak form factors, low  $Q^2$  spin structure functions, and short-range correlations. Hall B research focuses on studies with CLAS of the  $N^*$  program, the search for baryons in single meson production off a nucleus, and electromagnetic nucleon form factors and nucleon resonance transition form factors. Hall C research has accomplished world-leading results on the pion form factor, has verified the Burkhardt-Cottingham sum rule (important information on the nucleon spin structure), and performed the first measurement of pion transparency. Hall D staff is involved with the development of the future research program for the hall and instrumentation that will be required.

A dedicated computer cluster using graphic processor units (GPUs) became operational in January 2010 and is used to analyze LQCD configurations (generated elsewhere) to study quark-gluon interactions and particle propagation. This has a strong impact on the field, as it represents a more than five-fold increase in computer power available to the entire USQCD community for these types of calculations.

New physics insight was provided into how quarks are bound in mesons and hadrons through the calculation of the masses of states with exotic quantum numbers from dynamical LQCD by the Hadron Spectrum Collaboration in which TJNAF scientists play an important role.

The laboratory continues to nurture a core competency in Superconducting Radiofrequency expertise, which is important to the NP mission and other DOE and global initiatives. The laboratory also continues to support a core competency in cryogenics which has an impact on other NP and international facilities.

### **Objective 1.2: Provide Quality Leadership in Science and Technology**

**Weight:** 25.00%

**Score:** 3.6

**Grade:** A-

#### **Objective Evaluation:**

The Hall A senior staff is well-integrated into the highest priority physics topics in electromagnetic and electroweak physics and precision QCD tests. They have a good record of mentoring graduate students from user institutions.

A novel approach and innovative solution to LQCD problems is the use of GPU processors, where TJNAF provides quality leadership. To choose this architecture was a high-risk decision, which is now beginning to pay dividends by delivering unique results.

The Physics Department staff members have received numerous awards, ranging from international and prestigious national awards in nuclear physics to local awards and fellowships. The Laboratory received several recognitions in civic and business areas as well.

The Physics Department hosted twelve modest-sized meetings and workshops in nuclear physics and technical areas that are of direct interest to the JLab program. JLab staff participated in a variety of roles in the organization of international and national meetings and workshops. The Laboratory reported extensive seminar and colloquium series.

The Superconducting Radio-Frequency (SRF) and cryogenics groups are considered world-class and these groups are often consulted by international peers. Both will be involved in the development of the Facility for Rare Isotope Beams (FRIB). The laboratory is also involved in the development of a scientific and technical case for a proposed electron-ion collider.

The Center for Advanced Study of Accelerators (CASA) performs valuable R&D in beam physics, particularly the Energy Recovery Linac (ERL), instabilities, space charge in sources, Coherent Synchrotron Radiator (CSR), beam-beam forces, and linac dynamics. This research is internationally respected. CASA's educational effort is healthy and strong.

JLab has a broad outreach program with excellent K-12 activities, and an open house that attracted 7000 visitors in one day.

### **Objective 1.3: Provide and Sustain Outputs that Advance Program Objectives & Goals**

**Weight:** 25.00%

**Score:** 3.6

**Grade:** A-

#### **Objective Evaluation:**

The Physics Division has a sustained publication and reporting output that is well-aligned with the NP program. The staff reports peer-reviewed publications in leading physics journals as follows: Medium Energy – 16 (facility – 12); Nuclear Theory – 39 (facility – 13); Accelerator Physics – 5; and Free Electron Lasers – 3. Invited talks are reported as follows: Medium Energy – 52; Nuclear Theory – 92; Accelerator Physics – 16; Education – 2; Engineering – 2; and Free Electron Lasers – 3. Theses – 8 students wrote theses based on research at JLab.

Four U.S. Patents were granted to JLab staff, and six additional patent disclosures were made.

The CEBAF facility met its reliability goal with an end of year reliability of 91%. However, Halls A and C missed their goals in integrated delivered beam in FY 2010.

### **Objective 1.4: Provide for Effective Delivery of Products**

**Weight:** 15.00%

**Score:** 3.4

**Grade:** B+

#### **Objective Evaluation:**

JLab reported training opportunities for young scientists: Undergraduate Students – 81; Graduate Students – 90; Postdoctoral Associates – 44.

The ARRA AIP project is on track; however, two of the five ARRA GPP projects are experiencing delays. The ARRA LQCD project is meeting all of its planned milestones. The TEDF GPP project negatively impacted the 12 GeV construction project.

## **Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities**

**Weight:** 40.00%

**Score:** 3.49

**Grade:** A-

#### **Goal Evaluation:**



- Established a methodology to plan and document cost reductions; the Laboratory has identified eight areas of recent or ongoing cost reductions, and plans to optimize staff. The 12 GeV CEBAF Upgrade Project is making excellent progress with adequate cost and schedule contingency.
- The Project has incorporated installation and commissioning of two cryomodules into its baseline schedule, and several civil/conventional facilities have been completed ahead of schedule.
- The Project is actively managing high risk aspects of the project, the Hall B Silicon Vertex Tracker and the Hall D Solenoid Superconducting Magnet.
- The Continuous Electron Beam Accelerator Facility had excellent reliability; the average effective beam delivered was below the 80% goal for two of the three Halls.
- Facility operational budgets appear adequate and reasonably balanced to achieve near term goals.
- The facility has a large, international user community that is well satisfied. Work-for-others (mainly non-NP accelerator R&D) is synergistic with NP programs and valuable to other Programs.

**Objective 2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)**

**Weight:** 35.00%

**Score:** 3.6

**Grade:** A-

**Objective Evaluation:**

The overall 12 GeV Upgrade Project has made excellent progress during fiscal year (FY) 2010. The DOE-held cost contingency is considered good at \$50,816 million (41.4% ETCob/29.2% ETCosted) ensuring the likelihood that the project can be completed within cost. The Project maintains 12 months of schedule contingency prior to CD-4A, which is scheduled for March 30, 2014; and the Project has 6 months of schedule contingency prior to CD-4B, which is scheduled for June 30, 2015.

Accelerator Systems progress is excellent. In FY 2010, the Project has incorporated into its performance baseline the installation and commissioning of at least two C100 cryomodules and associated systems (e.g., klystrons, LLRF, controls) during the FY 2011 six month Scheduled Accelerator Down (SAD).

In FY 2010, Civil/Conventional Facilities progress has improved significantly. A number of the conventional facilities and/or infrastructure have been completed ahead of schedule, e.g., the Central Helium Liquefier (CHL) Building Addition and the North and South Access Low Conductivity Water (LCW) Upgrades. Early completion of this work prevents potential work interferences during the FY 2011 six month SAD. The largest conventional project is the Hall D Complex, and while significant progress has been made, it will be challenging for the Project to accomplish the Project Level II milestone, "Hall D Ready for Equipment (RFE)," by November 30, 2010.

The 12 GeV Project is providing excellent safety oversight of construction activities, however, there have been mishaps during this performance period that highlight the need for continual safety oversight vigilance by the Project. The recent hire of a 12 GeV Project Field Safety Representative, with increased responsibilities for field safety oversight on other aspects of the Project (e.g., accelerator installation activities), is commendable.

Physics Systems has made progress in many areas for each of the three new detector systems. While limited funds have been made available to these detector systems; critical procurements (e.g., Hall D Barrel Calorimeter fibers and production modules, Hall B CLAS12 Torus and Solenoid SC magnets) have been awarded to reduce project risks.

The Project has been proactive in identifying, communicating, and mitigating risks to the project. Two ongoing High risks are: Hall B Silicon Vertex Tracker (SVT) – with both potential cost increase and schedule impact; and the Hall D Solenoid Superconducting (SC) Magnet refurbishment – schedule impact. There is concern with the leadership of the Hall B Silicon Vertex Tracker (SVT) and the unsatisfactory progress on the SVT construction activities. There also exist concerns regarding the Hall D Solenoid SC magnet refurbishment. It is recognized the while the Hall D Solenoid SC magnet refurbishment is not being performed with Project funds, the success of the refurbishment and subsequent testing program couples to the Project's critical path, and ultimately the success of the Project. The Hall D Solenoid SC magnet refurbishment and testing efforts requires strong leadership that the laboratory has not yet been able to address.

### **Objective 2.3: Provide Efficient and Effective Operation of Facilities**

**Weight:** 50.00%

**Score:** 3.4

**Grade:** B+

#### **Objective Evaluation:**

#### **Notable Target: Investigate ways to reduce cost of operations of CEBAF.**

TJNAF management has established a set of project management based tools for planning and executing work at the laboratory. This includes about 100 separate activities, with a bottom-up basis for the estimates. An Annual Plan is developed that includes labor and non-labor costs. Milestones are included. Both standing reports and ad hoc reports are prepared where DOE has access to the data. The B&R categories are a subset of the data collection.

TJNAF has instituted a number of changes for cost savings including:

- Negotiated low utility rates with the Commonwealth of Virginia
- Implemented 3<sup>rd</sup> party financed energy efficiencies
- Installed geothermal heating and cooling
- Participated in a demand reduction initiative with Dominion Power
- Utilized innovative helium process technology developed at TJNAF
- Instituted a night set back
- Reduced deferred maintenance by 75%
- Moved to more contract labor to perform periodic tasks

TJNAF stated that their Staffing Plan Goals for FY 2010-FY 2016 are to:

- Align staff expertise and skills with program requirements/operations
- Manage staffing transition from 6 GeV operations to 12 GeV operations including the optimal use of term/contract employees during construction and installation
- Ensure staffing expertise and skill mix to deliver the 12 GeV science program
- Attract, develop and retain employees with specialized skills
- While controlling the growth of overhead and indirect staffing

Comment:

The web-based software tool used for resource allocation allows for comprehensive staff planning for the upcoming year and can easily be used by managers and the human resources team to track actual staff utilization and hiring against the plan. Out-year staff planning is done by individual managers and then gathered into a summary report that is used for future planning.

CEBAF operations in fiscal year FY 2010 met one of two performance goals. In particular, the reliability reached 90.7% compared to the goal of 80%. However the average effective beam delivered in the experimental halls of 65% (Hall A), 80.9% (Hall B) and 57.9 % (Hall C) was below the average goal of 80% in the 3 halls. The machine delivered 5283 hours, as opposed to the 5100 hours originally planned.

A facility operations review was held in July of 2010. The report stated that "The operational budgets appear to be adequate and reasonably balanced among activities to achieve near term goals."

The remaining 6 GeV program is competing for resources with the 12 GeV upgrade but it appears a balance is being achieved that could complete the program successfully.

#### **Objective 2.4: Utilization of Facility to Grow and Support Lab's Research Base and External User Community**

**Weight:** 15.00%

**Score:** 3.5

**Grade:** A-

##### **Objective Evaluation:**

The 1260 member user community continues to be generally satisfied with the laboratory's support of their research program and facility utilization however they did express concerns at the recent operations review about the transition between 6 GeV and 12 GeV operations.

The laboratory does an excellent job in attracting outside sources of funding on a work-for-others basis. Currently approximately 10% of their budget is from WFO activities, primarily in accelerator R&D and the DOD-supported FEL efforts.

#### **Goal 3.0: Provide Effective and Efficient Science and Technology Program Management**

**Weight:** 20.00%

**Score:** 3.41

**Grade:** B+

##### **Goal Evaluation:**

- TJNAF has an articulated mission statement, vision, and 5-year strategic plan; the management engages a variety of external and internal groups for guidance to set scientific goals.
- The TJNAF scientific goals are well aligned with those of the nuclear physics program. Work-for-others exploits core competencies that are a resource for other DOE laboratories.
- The Laboratory is effectively managing the requirement to complete the 6 GeV experimental program while building the 12 GeV CEBAF Upgrade Project.

- Communications with the NP Office could be improved, with requests for information sometimes not resulting in clear responses to requested information.

**Objective 3.1: Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

**Weight:** 40.00%

**Score:** 3.5

**Grade:** A-

**Objective Evaluation:**

TJNAF theorists demonstrate scientific vision in the process of planning for an electron-ion collider. Details of a specific research program for this type of facility remain to be articulated.

A mission statement, a vision, and 5-year strategic plan were presented at the 2010 operations review. Science goals were identified and serve as the basis for program planning with progress toward these goals serving as the measure of success. Facility core capabilities developed in support of their mission were identified as experimental, theoretical and computational nuclear physics, accelerator science, applied nuclear science and technology, and large scale user facilities and advanced instrumentation. The operations review report recognized management for making extensive use of outside advisory committees, internal director's reviews, and leadership meetings to set scientific goals. Users are represented in planning meetings and through experimental spokespersons.

**Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

**Weight:** 35.00%

**Score:** 3.6

**Grade:** A-

**Objective Evaluation:**

The 2010 operations review found that "The TJNAF mission is aligned with the Office of Nuclear Physics (NP) mission and the management approach effectively establishes scientific goals and has identified reasonable levels of resources for supporting the accelerator and experimental program in FY 2010". The report found that work for others performed by the laboratory was synergistic in that it exploited and supported core competencies and are an important resource to other DOE laboratories.

The laboratory seems to be doing an excellent job in juggling the competing internal efforts which accompany the implementation of a major upgrade construction project. While there is constantly a struggle between the 6 GeV ongoing program and the construction of the 12 GeV project, management is effectively handling these challenges.

**Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

**Weight:** 25.00%

**Score:** 3.0

**Grade:** B

**Objective Evaluation:**

Communications with the NP Office could be improved, with requests for information sometimes not resulting in clear responses to requested information. The operations review found that some charge elements and requests for information were not fully addressed.

Communications with TJNAF management occur via bi-weekly phone conferences, and periodic face-to-face meetings at the upper management level.

**Biological and Environmental Research  
Thomas Jefferson National Accelerator Facility  
FY 2010 Performance Evaluation  
Office of Science**

**Goal 1.0: Provide for Efficient and Effective Mission Accomplishment**

**Weight:** 75.00%

**Score:** 3.10                      **Grade:** B+

**Goal Evaluation:**

The JLab Radionuclide Imaging SFA has made significant progress in the design and development of an SPECT plant imaging system. Their recent published results have had a impact in the radioimaging and plant communities

**Objective 1.1: Science and Technology Results Provide Meaningful Impact on the Field**

**Weight:** 30.00%

**Score:** 3.1                      **Grade:** B+

**Objective Evaluation:**

- Recently published results have had a impact in the radioimaging and plant communities

**Objective 1.2: Provide Quality Leadership in Science and Technology**

**Weight:** 20.00%

**Score:** 3.1                      **Grade:** B+

**Objective Evaluation:**

- The BER Radiochemistry and Imaging Instrumentation SFA principal investigator and external collaborators are leaders in the radioimaging field especially in developing detector instrumentation that is specific for plant imaging

**Objective 1.3: Provide and Sustain Outputs that Advance Program Objectives & Goals**

**Weight:** 20.00%

**Score:** 3.1                      **Grade:** B+

**Objective Evaluation:**

- During the past year the BER Radiochemistry and Imaging Instrumentation SFA PI and collaborators have published 3 journal articles and presented 4 papers at national meeting describing design specification for a dedicated plant imaging system

**Objective 1.4: Provide for Effective Delivery of Products**

**Weight:** 30.00%

**Score:** 3.1                      **Grade:** B+

**Objective Evaluation:**

- JLab has delivered new imaging technology proposed in their recently funded SFA.

**Goal 3.0: Provide Effective and Efficient Science and Technology Program Management****Weight:** 25.00%**Score:** 3.10                      **Grade:** B+**Goal Evaluation:**

TJNAF has been effective in managing limited resources by leveraging expertise and resources within the lab to accomplish their goals

**Objective 3.1: Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision****Weight:** 20.00%**Score:** 3.1                      **Grade:** B+**Objective Evaluation:**

- TJNAF scientists have taken an active role participating in BER annual PI workshops and in collaborating with other laboratories such as ORNL, LANL, and academic institutions such as Duke University.

**Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program Planning and Management****Weight:** 30.00%**Score:** 3.1                      **Grade:** B+**Objective Evaluation:**

- The JLab Radionuclide Imaging SFA has made signification progress in the design and development of an SPECT plant imaging system by leveraging medical imaging technologies for new applications in the radioimaging and plant communities

**Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Customer Needs****Weight:** 50.00%**Score:** 3.1                      **Grade:** B+**Objective Evaluation:**

- The BER Radiochemistry and Imaging Instrumentation SFA PI has been very responsive in communicating with BER program managers. TJNAF scientists have taken an active role participating in BER annual PI workshops and in collaborating with other laboratories such as ORNL, LANL, and academic institutions such as Duke University.

**Workforce Development for Teachers and Scientists  
Thomas Jefferson National Accelerator Facility  
FY 2010 Performance Evaluation  
Office of Science**

**Goal 1.0: Provide for Efficient and Effective Mission Accomplishment**

**Weight:** 65.00%

**Score:** 3.85                      **Grade:** A

**Goal Evaluation:**

- The Science Education office at JLab has consistently, and especially during FY 2009, managed excellent science education programs for WDTS. Students, undergraduates and educators, including many in typically under-represented groups, receive individualized attention and instruction that ensures their success. Programmatically, JLab meets or exceeds all expectations of participants.
- The methods used to communicate science content and best practices in science education are creative, engaging, collaborative and systematic. Students and educators are placed in challenging research positions and supported through workshops and lectures that directly relate to the content knowledge required for their specific research projects.
- All participants are provided the complete range of resources needed for an exceptional laboratory research experience including individual support for content knowledge growth and assistance in the development of reference materials for educators that are appropriate to teaching complicated science concepts at various grade levels.

The science education program has dedicated itself to providing extensive science education and uses multiple opportunities to deliver the greatest learning impact to participants. Learning is focused on both science content and science pedagogy through mentor intensive research experiences, collaboration with other students and teachers, topical seminars, and enjoyable, engaging inquiry based activities. The dedicated staff is creative but disciplined and by maintaining an interactive relationship with current and previous program participants is able to extend the mentor relationship to promote ongoing learning.

**Objective 1.1: Science and Technology Results Provide Meaningful Impact on the Field**

**Weight:** 25.00%

**Score:** 4.0                      **Grade:** A

**Objective Evaluation:**

The education staff recruits and hosts a diverse population of participants including a broad range of age, experience, ethnicity, and education/scientific talent. The program requires that interns/educators collaborate with one another to build a level of loyalty among each cohort in an effort to extend interactions beyond the laboratory experience.

The education staff, by example and action, creates a culture among participants that supports the belief that success of the group is in part contingent upon the success of the individuals.

Educators and undergraduate interns collaborate and leverage talent with one another with the same high level of commitment demonstrated by their research mentors and the education staff.



**Objective 1.2: Provide Quality Leadership in Science and Technology****Weight:** 30.00%**Score:** 3.9**Grade:** A**Objective Evaluation:**

JLab is among the DOE laboratories at the forefront of providing "informal education" through their web presence. The JLab website is segmented by target audiences. Educator resources that serve to reinforce core science concepts for K-12 as well as undergraduate students are found in the form of worksheets, puzzles/games, reference material, and downloadable inquiry based activities.

JLab has dedicated itself to providing extensive science education opportunities and uses multiples avenues throughout the laboratory to deliver the greatest learning impact. These include facility tours, workshops, seminars, and classes designed to improve communication and raise awareness of DOE mission science.

**Objective 1.3: Provide and Sustain Outputs that Advance Program Objectives & Goals****Weight:** 30.00%**Score:** 3.8**Grade:** A**Objective Evaluation:**

JLab places their interns/educators in research experiences that are within the core competencies of the laboratory.

JLab provides many opportunities for interns to understand the science in other disciplines by developing customized workshops and enrichment activities.

**Objective 1.4: Provide for Effective Delivery of Products****Weight:** 15.00%**Score:** 3.6**Grade:** A-**Objective Evaluation:**

The science education office is a "trusted partner" within the laboratory with a history of hosting well-prepared interns whose serious and dedicated approach proves invaluable to the scientific endeavor.

**Goal 3.0: Provide Effective and Efficient Science and Technology Program Management****Weight:** 35.00%**Score:** 3.76**Grade:** A

### **Goal Evaluation:**

- JLab has done an excellent job of advancing the mentor culture at the laboratory. By hosting mentor workshops, supporting students and educators in their laboratory research, ensuring positive research relationships between mentor and intern, and providing technical and administrative support so that interns can work effectively, the JLab staff has maintained an education program that performs at a consistently high level.
- The office has focused time and talent on operating as a well-integrated team producing results that demonstrate a significant increase in productivity where student outputs are of superior quality and the research experience is a rich and productive one for mentee and mentor alike.
- The undergraduate and educator programs are among the best-in-class. Participants are fully supported with individual attention in content knowledge and the skills training needed to ensure that all deliverables are of excellent quality. A peer-to-peer culture where collaboration is the key component for individual and collective accomplishment is fostered.
- The education office persists in efforts to include participants from diverse populations in WDTs supported programs.

The education staff by example and action creates a culture among its participants that success of the group is in part contingent upon the success of the individuals. Educators and undergraduate interns collaborate and leverage talent with one another with the same level of commitment of their research mentor.

#### **Objective 3.1: Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

**Weight:** 20.00%

**Score:** 3.6

**Grade:** A-

#### **Objective Evaluation:**

The education staff by example and action creates a culture among its participants that success of the group is in part contingent upon the success of the individuals. Educators and undergraduate interns collaborate and leverage talent with one another with the same level of commitment of their research mentor.

#### **Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program Planning and Management**

**Weight:** 40.00%

**Score:** 3.9

**Grade:** A

#### **Objective Evaluation:**

Jan Tyler's commitment, management, and involvement in the National Science Bowl Advisory Board are central to the success of this program component and deserve mention here. The National Science Bowl is recognized as an especially well-managed activity. It is labor intensive requiring that dozens of details are attended to in order to ensure that hundreds of middle school and high school students are comfortable, secure and safe as they take part in this enriching experience.

The National Science Bowl has long been viewed as an important activity for inspiring the next

generation of scientists throughout the department and the entire DOE complex. The quality of the experience improves each year for all participants including those who attend the 64 regional competitions held across the country prior to the national event. The success of Science Bowl is due in large part to the camaraderie, collaboration, and foresight of advisory board members, in particular Jan Tyler.

**Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Customer Needs**

**Weight:** 40.00%

**Score:** 3.7

**Grade:** A-

**Objective Evaluation:**

JLab is always responsive to other education programs at other laboratories making available best-in-class practices and procedures to help raise the quality of programs.

JLab is always willing to work with WDTS to ensure the laboratory perspective and resources are used to the best advantage in support of the WDTS mission.